

structures, still with the eggs, could be seen two feet under water on 11. vii.

Podiceps ruficollis.

P. r. capensis (Salvad.). (= *albipennis*.)

Resident at Khushdil and breeding freely. Over one hundred and fifty bred there in 1913, and in 1914 I found over a hundred nests on 20. vi., mostly containing three eggs; several had four, one seven, and one six. In nearly every case the eggs were concealed by weeds. The nests were made of weed foliage and not stalks, and never measured over 12 inches across the top.

When the previous species was flooded out this Grebe scored by having its nest floating, and on 11. vii. all eggs were hatched except in two cases.

Though this species occurs at Khushdil in large numbers it is probable many go south at the approach of cold weather, for they did not seem so numerous in winter as they had been after the young were hatched.

IV.—*Notes on the Birds of Southern Palestine.*

By Colonel R. MEINERTZHAGEN, M.B.O.U.

(Plate II.—Map.)

THE following paper is based on a collection made by Colonel Lord W. Percy, Major Maurice Portal, and myself from May 1917 to March 1919, though considerable intervals occurred when, for various reasons, no work could be done. The bulk of the collection was made at Rafa in the autumn of 1917 and round Ramleh in 1918, whilst Major Portal visited Mount Carmel, the Jordan Valley, and several spots on the Judæan highlands.

A few additions to our notes have been borrowed from Major Sladen's paper in 'The Ibis' of April 1919, and I have made free use of some valuable information from Brig.-Gen. Clarke.

We owe much to the kindness of Mr. M. J. Nicoll, of the

Giza Zoological Gardens, for the free use we were able to make of his knowledge of the birds of the Near East, for housing and care of the collection, and finally for packing it up for shipment to England. I also must discharge a debt of gratitude to Dr. Hartert for the great help which was always available at Tring whilst working out the collection; and, finally, our thanks are due to Trooper L. H. Powell of the Gloucestershire Yeomanry, without whose services the collection would not have been possible, and whose skins have been so much admired by all who have seen them.

Corvus corax.

C. c. laurencei Hume.

Three males were obtained near Ramleh on 1. i. and 1. ii. Their wings measure 404, 405, and 430 mm. These birds do not differ from specimens from Baluchistan, and they are the normal Ravens in northern Palestine, the southern limit being a line drawn roughly from the Mediterranean at the mouth of the Wadi Sukereir in the latitude of Jerusalem, south-east to a point between Hebron and Bethlehem, and thence in a north-easterly direction towards the north end of the Dead Sea. They are resident and equally common on the coastal plain and the Judæan highlands, and are also abundant on Mount Carmel, but absent from the Jordan Valley.

Major Portal describes the courtship in the following words: "The cock sat on the top of a tree, courting the hen who was sitting below in the branches. I never heard such a variety of sound, for after the preliminary croaks he bubbled and clucked more like a parrot than a raven. The hen paid little attention, for she had just swallowed some meat with an opium pill and was drowsy; but the exasperated cock, mistaking her indisposition for inattention, suddenly fell on her and drove her away."

C. c. ruficollis Lesson. (= *umbrinus*.)

A common resident in northern Sinai, southern Palestine to just north of Gaza, east to Hebron, the Dead Sea, and the Jordan Valley. The wing of a male measures 384 mm., and

that of a female is exactly the same. In freshly moulted specimens the brown is almost absent.

Large numbers of these birds roost in the sand-dunes on the north Sinai coast from August to March. The flight of these desert birds is very strong and they can chase and catch Dotterel, which though possibly wounded, could still fly high and fast. It was no uncommon sight near Rafa in winter to see a pair of these Ravens away up in the heavens pursuing a Dotterel, which they eventually brought to ground. I am told that Ravens have been seen in Scotland pursuing Rock-Pigeons with success, but beat them down in flight with their wings.

The Arabs call this bird Ghurab el Nohi, believing it to be the Raven which Noah liberated from the Ark.

Corvus rhipidurus Hart. (= *affinis*.)

The Fan-tailed Raven was only observed in the Dead Sea and Jordan depression. There were two pairs nesting in cliffs near Jericho on 2.iv. They are very wild and difficult of approach. None were obtained.

Corvus cornix.

C. c. syriacus Gengler, J. f. O. April 1919, p. 221.

On 14 May, 1919, I described the Palestine Hooded Crow as *Corvus cornix judæus* (Bull. B.O.C. no. cexliii.), but this name must now become a synonym of *syriacus* which has a month's priority. Gengler bases his subspecies on a male and two females from Jerusalem.

This race is much smaller than true *cornix*, and has a slightly darker and browner mantle. The wings of seven Palestine birds vary from 278 to 305 mm., while typical *cornix* usually varies from 320 to 340 mm. Egyptian Hooded Crows are indistinguishable from European specimens, though they have a slightly smaller wing-measurement, five in the Tring Museum varying from 308 to 318, while Nicoll tells me his specimens are usually between 293 and 318, the largest bird being 357 mm. The bill of the Palestine bird is noticeably smaller than that of Hooded Crows from any other part of the world.

This race occurs as a breeding species from Khan Yunus just south of Gaza, north along the coastal plain to Acre, but is absent from Beersheba and Hebron. It is common in the Judæan highlands about Jerusalem, but scarce in the Jordan Valley. Tristram mentions Hoodies as common east of the Jordan in Moab and Bashan, but I have not seen specimens from there.

I noted a slight movement of Hoodies near Rafa about the end of September, and a few Palestine birds may stray to El Arish and even Egypt in winter.

Most of the nests found were in palm trees, while at Ludd two broods of young were hatched by 20. vi.

Corvus frugilegus.

C. f. frugilegus L.

A regular winter visitor in large flocks to southern Palestine. It commences to arrive about early November and to start north on 2. ii. Departures were observed on 5. ii., and all were gone by 2. iii.

Of three obtained, a female shot on 3. ii. had enlarged ovaries and showed no signs of losing her nasal bristles. Tristram remarks that only two out of twenty adults shot in spring showed any signs of denudation at the base of the bill, and it was remarked that most of the winter birds still had nasal bristles. One obtained on 24. xii. agrees as regards its bill with the Asiatic race "*tschusii*," but has a wing of only 314 mm. Another male shot on 5. i. agrees well with British specimens, and has a wing of 318 mm.

Tristram noted "rookeries" at Jerusalem and Nablus, but these appear to have vanished.

It seems possible that the Carrion Crows reported by Sladen (*cf.* Ibis, April 1919) were merely Rooks which still retained their nasal bristles.

Colæus monedula.

C. m. collaris (Drummond).

A few are to be found among most flocks of Rooks from early November to early February. The birds were not observed in summer, except near Jericho in May, where they were breeding in cliffs and sitting on eggs on 1. v.

One obtained near Ramleh on 5.ii. compares well with specimens from Bosnia as regards its under parts ; but the nuchal collar is no lighter than in British specimens.

Garrulus glandarius.

G. g. atricapillus Geoffr.

A local resident in the Judæan hills and on the foothills of the Shephelah, being by no means rare where it occurs. It lays three or four eggs in a typical nest in a small bush near the ground.

Of four obtained, two males have wings of 182 and 190 mm., and two females have wings of 175 and 187. The amount of white on the forehead shows great variation, sometimes being confined to the forehead proper, and at other times extending nearly to the crown. The colour of the back varies in birds even from the same locality, a specimen from Jerusalem being very pale, which does not appear to be due to bleaching.

Amydrus tristrami Selater.

Found in the gorges south and south-west of Jericho and in the wadis running into the Dead Sea on the west side. It probably also occurs throughout the Dead Sea depression, south to Petra, and possibly elsewhere in N.W. Arabia.

The nest is an untidy collection of sticks and roots placed on the ledge of a cliff.

Sturnus vulgaris.

S. v. sophie Bianchi. (= *jtkowi* But.)

S. v. purpurascens Gould.

Several examples of both these forms were obtained from 28.x. to 8.i., the two races being invariably mixed up in the same flock.

Starlings arrive in their thousands in southern Palestine in the last days of October, the first flocks appearing to pass on towards Egypt mostly flying at a height of about 400 feet. In winter they are more numerous around Gaza and Rafa than further north. Not observed in the hills of Judæa or the Jordan Valley, and entirely absent in summer.

Pastor roseus (L.).

An immature bird shot at Rafa on 10.viii. was the only one observed.

Oriolus oriolus.

O. o. oriolus (L.).

A bird of passage in fair numbers in southern Palestine, and confined to the coastal area. It commences to arrive about 20.viii., the immature birds and females arriving first, the adult males following in the first week of September. At Rafa it was common till 20.ix., and the last seen was a female on 3.x.

On spring passage the cocks pass through first, from about 18.iv., and the passage was complete by 11.v. None were observed in summer or winter.

Coccothraustes coccothraustes (L.).

A male was seen on Mount Carmel on 22.iv. and another in the Jordan Valley in March. Not obtained.

Chloris chloris.

C. c. chlorotica (Bp.).

Common resident in suitable places throughout southern Palestine, south to Khan Yunus, north to Carmel, and east to Jerusalem and Hebron. It commences building in late March, usually selecting an olive tree and placing its nest about eight feet from the ground. The structure is composed of bents and grass-stalks, lined with finer grass and horse-hair. A remarkable nest, composed entirely of horse-hair, was seen by Clarke in a eucalyptus tree. Fresh eggs were found from 10.iv. to 22.iv., but one clutch of five was obtained by Sladen as early as 14.iii. This species is double-brooded.

Six males obtained have wings varying from 81 to 86 mm. This race is so near *aurantiventris* as to make it somewhat difficult to determine, but it is very slightly paler on the back and under parts and has, as a rule, a smaller wing.

Carduelis carduelis.

C. c. hermsi Reich.

Sladen is wrong in referring the Palestine Goldfinch to the typical race. We obtained altogether fifteen specimens, and they agree exactly with birds from Eregli in Asia Minor. This form appears to extend to the Caucasus, Asia Minor, and Cyprus, and the races *minor*, *loudoni*, *brevisrostris*, *niedecki*, and *colchicus* will probably all be found to be synonymous with it. The wings of fourteen males vary from 75 to 78 mm., whereas typical *C. c. carduelis* has a wing varying from 79 to 84 mm. The back of *hermsi* is paler and the breast-patches are earthy-grey.

The Goldfinch occurs as a resident throughout southern Palestine from the coast to the Jordan Valley, being seen in the latter place in flocks in March; it was not observed west of Khan Yunus. It commences to build in the middle of March, and both eggs and young were found in the middle of April. A nest found eleven feet from the ground in an almond tree was made of dead grass, decorated with pieces of cotton and twine, grass-seeds, and cotton-wool. The cup was lined with white seed-down and a few horse-hairs, mostly woven round the lip.

Acanthis cannabina.

A. c. fringillirostris (Bp. & Schleg.).

Four examples were obtained in October from Artuf, and five from Mount Carmel in April, where they were breeding. These birds compare well with specimens from Turkestan and Asia Minor. The wings of five males measure 80 mm., and of two others 82 and 83 mm. respectively.

Serinus canaria.

S. c. serinus (L.).

A plentiful winter visitor to the coastal plain and Judæan hills, being sometimes seen in flocks of over two hundred. No record was made of their dates of departure and arrival. The wings of two males measure 71 and 72 mm. respectively.

Rhodospiza obsoleta (Licht.).

Thirteen specimens were obtained from 31.x. to 23.iii. This species appears to be only a winter visitor and occurred in large numbers near Ramleh, the first arrivals being observed on 26.x., while the last noted was on 24.iii., when the birds were in flocks of a hundred or more.

The wings of seven males vary from 83 to 87 mm., but are mostly 85. Those of five females vary from 79 to 84 mm.

Fringilla cœlebs.

F. c. cœlebs L.

A common winter visitor throughout the country, first arrivals being noted near Rafa on 11.ix., when a flock of females appeared. In the following year at Ramleh it was not noted till 15.xi., when large flocks of females appeared. All the flocks had gone north by 12.iii., only single hens remaining, the last being seen on 22.iii. A few were seen at the north end of the Dead Sea in November.

Passer domesticus.

P. d. biblicus Hart.

A plentiful resident, breeding in wells and houses. About early October it commences flocking and is subject to local movement in search of food. The nests vary much in size and structure, some being small and unlined, others being masses of grass 16 inches across and thickly lined with feathers. A nest placed in a tree on Mount Carmel on 23.iv. was 30 feet from the ground and contained six eggs. This race of Sparrow ranges in northern Sinai at least as far west as Rafa.

Passer moabiticus.

P. m. moabiticus Tristr.

Confined to the Dead Sea depression and the lower Jordan Valley. It appears to have extended its range in recent years from the south end of the Dead Sea, and now occurs in the Jordan swamps about three miles north of the Dead

Sea, where it breeds, the young having flown by 7. v. The nests are placed in tamarisk bushes about five feet from the ground and clear of flood-line, and are constructed of dead interlaced tamarisk needles. They are huge cone-shaped structures with an entrance at the top or on the side of the top. The base of the cup is lined with Chukar and Francolin feathers and cotton-down. One nest was 16 inches deep and 6 inches in diameter.

The birds were plentiful at the north end of the Dead Sea in November and June, but absent in late February and throughout March. Five were obtained in November.

Passer hispaniolensis.

P. h. transcaspicus Tschusi.

Locally plentiful in the coastal plain and in the Jordan Valley, being resident. It does not appear to occur much south of the latitude of Jerusalem. The wings of five males vary from 75 to 80 mm.

Emberiza calandra.

E. c. calandra L.

Mainly a winter visitor, being commonest in the coastal plain. Near Gaza these winter birds first appeared on 10. x., and in a few days many thousands watered on the Wadi Gaza from Gaza to Beersheba, but they suddenly disappeared on 18. xii.

Near Ramleh they remain as late as 31. iii.

There are also some resident birds in the valleys of the Shephelah and locally in the coastal plain. In winter these residents never flock, and can be seen singly or in pairs in January or December, sitting on top of thorn bushes rasping out their note, while a flock of winter birds as wild as hawks may be feeding close at hand.

Of nine obtained, the wings of the males vary from 90 to 99 mm. and those of the females from 89 to 93 mm. All examples except two can be matched by others from southern Europe and by dull-coloured specimens from Great Britain. Two females, however, are noticeably different. One shot

on 23. xi. is a richly coloured rufous bird, and compares well with typical British examples. The other, shot on 22. iii., is a light coloured bird with a bleached appearance, even lighter than the palest Turkestan specimens.

I commend the Corn Buntings of Palestine to Mr. Bannerman.

***Emberiza melanocephala* Scop.**

A summer visitor to southern Palestine, keeping mainly to the coastal plain and becoming less common near Gaza. Earliest arrivals were noted on 26. iii., the males preceding the females, and the latest on 4. xi., so it is possible a few remain for the winter.

In spring one or two pairs can always be found in every orange grove, the birds preferring those which have been cut back. The nests were never more than three feet from the ground and occasionally almost touching it. The nest is usually in an orange tree, but sometimes in low scrub on a bank. An abnormal nest found by Clarke was entirely made of a species of yellow flowering trefoil, which was in full bloom when it was found.

Of eight birds obtained the wings of males vary from 89 to 97 mm., being mostly between 92 and 94.

***Emberiza hortulana* L.**

Only observed as a bird of passage. In spring it commences passing north in the coastal plain from 17. iii. In autumn at Rafa it was first observed on 8. ix., singly and in small family parties. The numbers increased on 17. ix., but became less on 28. ix., and none were seen after 5. x. No adult male was observed in autumn.

***Emberiza cæsia* Gretzs.**

A summer visitor and bird of passage to southern Palestine, breeding on Mount Carmel, where eggs were hard-set on 28. iii., as well as south to Ramleh and in the Judæan hills.

In autumn it commences moving south at the end of August and gradually works its way across northern Sinai, apparently in a south-westerly direction, to its winter

quarters, presumably in the Sudan. The passage was at its height during the first three weeks of September, it became scarce on 24. ix., and none were seen after 4. x. In spring the breeding birds commence to arrive in the first week of March or even earlier. But those passing to breeding quarters further north were still in small flocks at Ramleh on 20. iv.

Of thirteen specimens the wings of males vary from 80 to 87 mm., while those of females measure 81 mm.

Emberiza pyrrhuloides.

E. p. korejewi (Sar.).

A single female of this race described by Sarudny in 1907 (Orn. Monats. 1907, p. 83) from Seistan and Persian Baluchistan, was obtained by Percy in the Wadi Rubin on 6. ii. Wing 78 mm. It agrees with Seistan specimens, also with a bird from Syria in the Tring collection. The bill is perhaps a shade smaller, but without a series for comparison such a difference may be merely due to individual variation.

Melanocorypha bimaculata.

M. b. gaza Meinertz.

I described this new race of *bimaculata* in the Bull. B.O.C. cexliii. May 1919, p. 84. It differs from the typical form in its whole upper parts being much more rufescent and in having a pale buff instead of a white eye-stripe. The black patches on the sides of the breast are smaller, more confined, and more widely separated. A continuous band of dark brown spots extends across the chest, whereas in the typical form these spots never stretch across the chest and only occur in rare instances even on its sides. Bill very much smaller and stumper. Wings of two males 115 and 116 mm. and of two females 108 and 116 mm. One unsexed has a wing of 115 mm.

These Larks occurred in immense flocks on the Wadi Gaza from 10. viii. till the end of October, coming to water in the morning and evening; as many as twenty were once secured at a shot. Their flight was particularly strong. None were seen after the middle of December.

This species (though, as no specimens were kept, I cannot say of which race) is a common breeding bird near Gaza, the first eggs being found on 8. iv. and fledged young seen on 6. v. A few breed near Jaffa.

Tristram described this species as breeding high up in Lebanon and Hermon. Those represent the typical form, which also occurs in Syria in summer. It is, therefore, probable that this new race is confined to Palestine proper, and will be found in winter in Egypt and the Sudan.

Calandrella brachydactyla.

C. b. longipennis (Eversm.).

The resident Short-toed Lark of Palestine should be the typical form, but in southern Palestine, on the borders of Sinai, we found this race breeding abundantly in May and June. In early August they flock, and in early September they move elsewhere. We had no opportunity of observing their spring arrival.

C. b. rubiginosa Fromh.

A bird of this race was shot on 18. viii. at Shellal. Its status in Palestine is not known, but Nicoll tells me that he has found it breeding in Egypt, and it is possible it also nests in some locality in Palestine where other forms do not occur, possibly in Sinai proper and south of *longipennis*. In any case the Short-toed Larks of Palestine furnish us with an interesting problem, which with our scanty material we cannot hope to solve.

Some race of this Lark breeds at Esdud and Jaffa, Clarke having taken eggs on 6. v.

Calandrella minor.

C. m. minor Cab.

This species was certainly in the minority in southern Palestine and northern Sinai, and was not observed in the breeding season.

Of seven specimens obtained, the adults compare well with similar birds from north-west Africa. Four birds of the year obtained are much more rufescent, the dark markings

on the back and crown being less conspicuous than in adults.

Ammomanes deserti.

A. d. fraterculus Tristr.

A local resident in suitable country, being found at Shellal on the Wadi Gaza, at Beersheba, and near Jericho. This race apparently extends east to the Persian Gulf and north to Kuryatein in the Syrian desert. Of six birds obtained the wings of males vary from 92 to 99 mm.

Galerida cristata.

G. c. brachyura Tristr.

An abundant resident in northern Sinai, southern Palestine, and north to Jaffa. It occurs in both the coastal plain and in the Judæan highlands south of Jerusalem. North of the line Jaffa-Jerusalem birds tend towards *cinnamomea*, though a specimen from Carmel, whence the type of this race was obtained, on being compared with the actual type of *cinnamomea* cannot be referred to it. Hartert (Vög. pal. Fauna, p. 235) remarks that birds from Jerusalem and Asia Minor are intermediate between *cinnamomea* and *brachyura*. I do not wish to question the validity of *cinnamomea* as a subspecies, for the two specimens in the Tring collection, both from Mount Carmel—one of which is the type—are absolutely distinct from any of the fifteen *brachyura* we obtained in southern Palestine, being of a rich cinnamon-red on the upper parts. I am, however, unable to distinguish *G. c. eritree* Zedlitz from the west Red Sea littoral from *brachyura*.

As regards the Crested Larks of Palestine, one can only say that typical *brachyura*, stretching from both shores of the Red Sea north to the line Jaffa-Jerusalem, becomes redder in the Judæan highlands and north of the Jaffa-Jerusalem line, birds from Carmel and possibly elsewhere in such places as the Lebanon and Hermon, being typical *cinnamomea*, whilst surrounding *cinnamomea* occur examples which are intermediate between that race and *brachyura*.

Brachyura breeds freely in southern Palestine, full clutches being found near Gaza from 30.iii. and round Ramleh from 20.iii. Second broods can be seen till late June or early July. A large desert Lizard takes great toll of both young and eggs of this Lark.

Lullula arborea.

L. a. pallida Sar.

This pale race of the Wood-Lark was met with near Hebron in the Judæan highlands on 8.xii., when it was fairly common in small flocks on the rocky hill-sides. It was also found near Ramleh in small flocks in the following December. Odd birds were shot on 5.ii. and 15.iii. Tristram describes them as resident. Perhaps they are.

Of five obtained the wings of three males measure 94, 96, and 100 mm.

Alauda arvensis.

A. a. cantarella Bp.

A. a. cinerea Ehmcke.

Of three winter birds obtained I am compelled to refer two to *cinerea* and one to *cantarella*, the latter being shot from a flock of about twenty birds, another of which proves to be *cinerea*. The other *cinerea* was shot on 9.xi.

On comparing these specimens with a large series of both forms, I found that *cantarella* and *cinerea* intergrade a great deal, and birds frequently occur which one cannot with certainty refer to either race; but our specimens are typical, the *cantarella* comparing well with Italian birds, and the *cinerea* matching Turkestan specimens.

Skylarks put in their first appearance in southern Palestine at Rafa on 31.x., when both races were obtained. By 3.xi. the whole country was a mass of Larks from Rafa and Beersheba north to Jaffa and Hebron. Their numbers showed a marked decrease about 4.xii., but they were still plentiful throughout January. In Central Palestine, at Tulkerām, many tired flocks were seen on 21.x,

On spring passage there were many flocks passing Ramleh on 19.iii.

The birds were not seen in summer and certainly do not breed in southern or central Palestine.

Anthus campestris (L.).

A resident scattered in isolated pairs throughout the country and nowhere abundant. Observed from Rafa and Beersheba north to Carmel, Jerusalem, and the Jordan Valley. It was found in the coastal area in summer and in the Jordan Valley in March. It is probable that a good many undertake a local movement from the highlands of Judæa to the Gaza-Beersheba plains of northern Sinai in winter.

Of six birds obtained, the wings of four males measure 85, 86, 92, and 97 mm. One of these small-winged birds was shot in the pure desert at Shellal and is a paler and yellower bird than any others I have seen, so much so that it is difficult to refer it to *campestris* at all. Its small size and yellow colour are quite remarkable, and yet it can be nothing else but this species.

Anthus sordidus.

A. s. captus Hart. (= *A. leucophrys captus* Hart.)

This fine Pipit is confined in Palestine to the Judean hills north of Jerusalem and to Mount Carmel, descending to the Jordan Valley and the coastal plains in winter. Its northern limit was not ascertained.

Our six specimens compare well with the type, also with another Palestine bird, and with a series which I obtained in Baluchistan. All our birds are males, with wings varying from 90 to 94 mm.

Anthus trivialis.

A. t. trivialis (L.).

A bird of passage to southern Palestine, but only noted in autumn. It commenced to arrive on 8.ix., but it was not till 16.ix. that they became common in small parties. Last seen on 28. x. Four examples were obtained.

Anthus pratensis (L.).

Quite rare in southern Palestine and only met with near Hebron on 8. xii., and in the Shephelah in late December and early January. It does not seem to leave the hills, and was not observed in summer. Four examples were obtained.

Anthus cervinus (Pall.).

A common bird on autumn passage, a few remaining through the winter in southern Palestine. First arrivals noted at the mouth of the Wadi Gaza on 10. x., mostly flocks of young and adults still in breeding-plumage. Large companies appeared round Rafa from 11. x. to 22. x. and then passed on, though they were still plentiful near the coast at Gaza. A few were seen near Jaffa and Gaza in December and January.

Only noted on spring passage at Jaffa from 12. iv. to 27. iv.

Birds were in full change from summer to winter plumage in October, but a few with red throats were observed to the end of November. No red throats were seen after the middle of December.

Anthus spinoletta.

A. s. coutellii Sav.

Common at the mouth of the Wadi Gaza on 13. xi., but not otherwise noted though possibly overlooked. These Pipits can be at once recognised in the field by the erect angle of their tails, which is most noticeable when seen in company with *cervinus* or *trivialis*.

One obtained on 13. xi. has a wing of 82 mm. The specimen is in full winter plumage.

Motacilla flava.

M. f. flava L.

A common bird of passage in spring and autumn in southern Palestine. Small family parties of old and young commenced appearing at Rafa on 7. viii., and became fairly

plentiful after 21. viii. Plentiful throughout September and to 8. x., after which date the numbers decreased, and none were seen after 19. x.

On spring passage they moved north along the coastal plains from 20. iii. to 23. iv. in flocks of forty and fifty. One was shot at Jerusalem on 18. iv.

Of nine examples obtained in spring and autumn, all are typical *flava flava*. I note that Sladen (Ibis, April 1919) refers his specimens to *flava beema*, and in view of the identification having been made by Ogilvie-Grant, I do not question its accuracy. But it is nevertheless remarkable that Sladen's birds should be *beema* and ours typical *flava flava*. I regret I have been unable to examine Sladen's birds.

M. f. dombrowskii (Tschusi).

A very typical adult male of this race was obtained at Ramleh on 22. iii. Its occurrence so far east is interesting.

***Motacilla melanocephala*.**

M. m. melanocephala Licht.

I prefer to keep the Black-headed Wagtails separate from the *flava* group.

An uncommon bird of passage in spring and autumn, being obtained from 2. ix. to 17. ix., and again on 22. iii. A flock of from forty to fifty were noted at Ramleh on 20. iii.

***Motacilla citreola*.**

M. c. citreola Pall.

A solitary bird obtained at Shellal on 23. ix. is referred to this race. It is in immature plumage and difficult to identify, but in view of the locality and its small size (wing 81 mm.) I place it under this race, though in plumage it exactly agrees with *citreoloides* in immature plumage from Assam. I have been unable to compare it with examples of *citreola citreola* in similar plumage.

Motacilla cinerea.

M. c. melanope Pall.

A bird in winter plumage was obtained near Jerusalem on 23. i., and proves to be the eastern race of the Grey Wagtail. Not otherwise seen, though Tristram notes Grey Wagtails as not uncommon in winter.

Motacilla alba.

M. a. alba L.

A bird of passage on both migrations and a winter visitor to southern Palestine. In the autumn it first appeared at Rafa on 2. x., and became plentiful throughout the country after 6. x. There was a considerable decrease in the numbers towards the end of October and again in early December. A few remained in the Shephelah and on the coastal plain in January and February. On several occasions flocks of 300–400 could be seen on the north Sinai desert roosting in thorn trees.

In spring flocks commenced to arrive from the south as early as 25. ii. None seen in summer.

Cinnyris osea.

C. o. osea Bp.

This bird is now generally distributed throughout the coastal plain from Gaza at least as far north as the southern slopes of Carmel. It does not appear to exist in the Judæan Hills but occurs again in the Jordan depression. It seems to be found in the above localities throughout all the year.

At Haifa, north of Carmel, it was plentiful in February and March, became scarce towards the end of April and then disappeared. None breed at Haifa.

Of six obtained the wings of four males vary from 52 to 54 mm. A bird of the year, a male, shot on 9. xi., has almost assumed adult plumage on the back, whilst its head and lower parts have scarcely an adult feather in them.

Parus major.

P. m. terre-sanctæ Hart.

This race appears to be but a small form of *zayrossiensis* described by Sarudny from south-west Persia. Birds from the Lebanon have slightly larger wings—73 mm.—but do not differ in any other way. *Terre-sanctæ* also has a very slightly darker back than *zayrossiensis*.

Seven males in our collection have wings from 65–71 mm., and three females have wings from 66–70 mm.

The southernmost point on the coast where this bird was observed was Askalon just north of Gaza, and the most northerly point the Lebanon. Observed at Jerusalem in winter, but not seen in the Jordan Valley.

Sladen (Ibis, April 1919) refers the Palestine Great Tit to *blanfordi*, which is confined to the country just south of the Caspian. This certainly is an error.

This Tit nests in holes in walls or olive trees. Seven half-fledged young were found at Ramleh on 27. vi. The bird is quite common throughout the coastal plain and the hills of Judæa.

Lanius minor Gm.

Fairly common on autumn passage at Rafa, but not noted in spring anywhere in southern Palestine. Tristram notes that this species is very irregular in its visits, only being seen once between 1858 and 1872, but was very common on passage in the middle of May 1882 (Ibis, 1882).

During autumn passage at Rafa the first arrivals appeared on 14. viii. and the bird soon became common, adult birds predominating. They became scarce at the end of August, the last seen being on 2. ix. This species is a very early migrant, the period of passage being comparatively short. Lynes (Ibis, Jan. 1912) noted the passage in Egypt to last from mid-August to mid-September, whilst on the west coast of Asia Minor birds were moving south from 7. viii. to 13. viii. They pass through Armenia from mid-August to early September, through Yemen in early September, arriving in Rhodesia about October.

Lanius excubitor.*L. e. elegans* Swains.

The resident Shrike of northern Sinai and southern Palestine, at least as far north as the line Jaffa-Jerusalem, but becoming scarce north of Gaza. Recently fledged young were being fed at Belah-on 3. vi., but no nests were found.

Of nine obtained, the wings of the males vary from 112 to 115 mm., and those of the females from 107 to 110 mm. The immature plumage of this race scarcely ever has a trace of the crescent markings usual in the young of other races of *excubitor*.

These Shrikes feed largely on small lizards and beetles, but will attack wounded or caged birds as large as themselves, one having been known to make a most determined effort against a full-grown Cream-coloured Courser. A Shrike, possibly of this race, was seen to chase and kill a Sunbird in the Jordan Valley. Throughout the summer these birds could be seen perched on cactus hedges or telegraph-wires, perpetrating the most varied selection of noises ever heard, sometimes very melodious and at other times insistently raucous and rasping. During the operation they puff out the feathers of the head and neck, turning from right to left in their self-satisfaction at each new operative effort.

They adapted themselves quickly to the mass of barbed wire round Rafa, and more than one "larder" was found spiked on the barbs.

Lanius senator.*L. s. niloticus* Bp.

The Eastern Woodchat was only once seen on autumn passage at Rafa—on 21. viii.—which is curious, as it is such a common summer visitor to the coastal plains of southern Palestine, breeding very commonly on Mount Carmel. These breeding birds commence to arrive about the middle of March, full clutches of seven fresh and five incubated eggs being taken on 24. iv. and 26. iv. respectively, the larger clutch being of the greenish-blue type and the smaller

clutch the pink type. The first nest was placed five feet from the ground on the outer branch of an almond tree. It is a compact structure of grass, weed-stalks, and fibrous roots, without lining. The inside measurements of the cup are 80 mm. from lip to lip, and 60 mm. deep. The second nest differed from the first in being thickly lined with sheep's wool.

Lanius nubicus Licht.

A common bird of passage in southern Palestine, only breeding in the northern parts. On autumn passage it commences moving south on 9.viii. The passage continues throughout August to early September. After 10.ix. it was scarce, and only one was seen after 19.ix., and that an immature bird on 3.x. In spring it commences moving north about 12.iii., and soon becomes common, the main passage being over by the end of the month, and only belated birds being seen in April.

Lanius collurio L.

Only noted on autumn passage. First observed on 15.viii., when an adult male arrived on the desert near Rafa. Several were seen on 18.viii., after which date they became common. No immature birds were observed till 24.viii., when they began to predominate. No adults were seen after 30.viii., and immature birds did not become scarce till 23.ix., the last seen being on 30.x.

It was noted that adults kept almost entirely to the open country, whilst immature birds confined themselves to gardens. This seems due to the fact that the adults pass straight through, whereas the immature birds require food and rest on their journey.

Pycnonotus capensis.

P. c. xanthopygos (Hemp. & Ehr.).

The Palestine Bulbul is resident in the southern districts along the coastal belt from Gaza north to Mount Carmel, where it becomes scarce. None were seen in Haifa or Acre. It is common in the Shephelah north of Beit Jibrin, but

absent from the hills of Judaea, though an abundant breeding species in the Jordan Valley at its southern end.

It breeds freely in cactus hedges or orange trees, and Clarke found two nests in reeds. The rather large structure is composed of dried grasses, sometimes with a few dried leaves worked in, and lined with fine dry grass. Four incubated eggs were found at Jericho on 13. iv., and in the coastal plain fresh eggs were found from 26. iii. to early June.

Muscicapa striata.

M. s. striata (Pall.).

The five autumn birds brought home belong to the western race and compare well with British and Continental specimens. These birds passed Rafa in autumn, commencing from 16. viii., and soon became common, especially so from 24. viii. to 21. ix. They were scarce after 29. ix. The last was seen on 16. x.

Flycatchers breed in southern Palestine, but unfortunately no summer birds were obtained, for these may belong to the eastern race. There were many breeding round Jaffa on 23. v., and five young in the nest were found at Ramleh on 3. vii.

***Muscicapa albicollis* Temm. (= *collaris* Bechst.)**

Two immature males shot at Rafa on 10. x. were the only ones we saw on autumn passage. A pair was obtained later on Mount Carmel on 17. iv. and 26. iv. Not otherwise seen.

Phylloscopus collybita.

P. c. collybita Vieill.

The Chiffchaff was not observed on autumn passage at Rafa till 27. x., when a few appeared. After that date, and until at least early January, an odd one or two could be seen in the gardens. They were fairly common on the bush-clad slopes of the Shephelah in December and January.

The wings of four obtained measured from 56 to 62 mm.

Phylloscopus trochilus.

P. t. trochilus (L.).

Autumn passage at Rafa commenced on 22.viii., after which date the species became common. The maximum number occurred towards the end of September and in early October. After 7.x. it fluctuated daily, the birds being in hundreds some days and absent altogether on others. None seen after 24.x.

No records were made of spring passage. None were seen in summer or midwinter. Of ten obtained, the wings of seven males vary from 64 to 70 mm.

P. t. eversmanni (Bp.).

The first bird of this race noted for certain was on 26.ix. A few could be seen in early November, and a large influx occurred on 22.xi. They became very scarce after 29.xi., only one or two being seen in December.

The wing of a female measures 71 mm.

Phylloscopus bonelli.

P. b. bonelli (Vieill.).

An early passage migrant in southern Palestine, occurring in small parties from 14.viii. to 2.ix., after which date none were seen. Four birds were obtained; all belong to the western race. Both western and eastern races occur in Egypt in winter, the latter predominating.

Luscinola melanopogon.

L. m. melanopogon (Temm.).

A few occurred at Rafa on autumn passage from 1.xi. to 29.xi. Two were obtained. Not noted on spring passage.

Locustella luscinioides.

L. l. luscinioides (Savi).

An adult female was shot at Rafa on 26.x. The species was not otherwise noted. There is another bird in the Tring collection from Palestine dated 19.ix.

Locustella fluviatilis.

The River-Warbler was only obtained once, on 30.ix. at Rafa. The specimen is curious in having no trace of the greenish tinge, which is quite distinct in the series both at Tring and in the British Museum. Wing 71 mm.

Acrocephalus arundinaceus.

A. a. zarudnyi Hart.

Scarce on autumn passage at Rafa. First seen on 20.viii. and last on 10.ix., but always singly. Of three obtained, the wings of males measure 95 mm. and that of one female 94 mm. All birds are in full body moult, though the wings are complete.

Not noted on spring passage.

Acrocephalus scirpaceus.

A. s. scirpaceus (Herm.). (= *streperus* Vieill.)

Noted on autumn passage at Rafa from 15.viii. to 7.ix., after which it became scarce, the last being seen on 26.ix.

On spring passage it occurred at Ramleh and in the Wadi Rubin from the second week in March to 27.iii.

Not observed in summer.

Of seven obtained, the wings of five males vary from 64 to 67 mm.

***Acrocephalus palustris* (Bechst.).**

Occasional on passage at Rafa from 15.viii. to 3.ix. As this species could only be identified when it condescended to use its voice, and as it was comparatively silent on passage, possibly many were overlooked, for we failed to discriminate between Reed-Warblers, Marsh-Warblers, and *Hippolais pallida*, unless we heard them call or actually handled them.

***Acrocephalus schoenobaenus* (L.).**

First observed on autumn passage at Rafa on 20.viii., when a few were scattered over the desert scrub, looking very lost and tired. They remained till 26.viii., after which none were seen till 6.ix., when one was caught alive

and liberated. A few appeared again on 17. ix., and another was caught on 25. ix. No records made of spring passage.

Hippolais pallida.

H. p. elveica (Lindermayer) Isis, 1845 (Greece).

This race is paler and greyer than *H. p. pallida* from Egypt and southern Europe, and is very distinct when seen in a large series.

Very common on autumn passage at Rafa from 13. viii. to 22. x. The spring arrival in southern Palestine was not noted, but the birds bred plentifully round Jaffa, nesting in orange trees, or sometimes in colonies in reeds, seventeen nests being found in the former and five in the latter. A few laid early and had young by 10. v., but most had eggs from 18. v. to 31. v.

Of eight obtained, the wings of four males measured from 65 to 69 mm.

Sylvia hortensis. (= *orphea*.)

S. h. crassirostris Cretzschm.

A few were seen on autumn passage at Rafa from 15. viii. to 7. x., but they were never common. They were also common on Mount Carmel in the latter half of April, but were not found nesting, though they undoubtedly were doing so.

This form is readily distinguished from the western race by the very much whiter under parts.

Sylvia borin (Bodd.). (*Sylvia hortensis* auctorum.)

The Garden-Warbler was first observed on autumn passage at Rafa on 27. viii. and soon became common, birds of the year predominating. It became scarce on 18. ix. and was not seen after 28. ix., except for one on 6. x.

No records made of spring passage.

Sylvia atricapilla.

S. a. atricapilla (L.).

On autumn passage these birds were first seen at Rafa on 3. ix., after which there were always a few in the

gardens till 16. ix., when they completely disappeared. On 21. ix. a new influx arrived, mostly females and immature birds; a few were noticed in October, but none in November. A belated female seen on 15. xii.

The spring passage seems to be complete by the last week in March. They were breeding on Mount Carmel in April, when eggs were found.

Sylvia communis.

S. c. communis Lath.

The passage migrants, of which eleven were obtained, were all the western race, but no breeding birds were obtained. The autumn passage commenced at Rafa on 15. viii. and ended on 24. ix., during which period they were common.

Two nests with slightly-incubated eggs were found near Jaffa at the end of May, but this may refer to the eastern race, *icterops*, which certainly breeds in the Jordan Valley if not throughout Palestine.

Sylvia curruca.

S. c. curruca (L.).

The autumn passage at Rafa commenced on 31. viii., and specimens became plentiful from 3. ix. to 30. ix. By 10. x. they were scarce, and were only once seen in November; the last was noted on 15. xii. One was observed near Ramleh on 2. i.

A few were seen in the Jordan Valley in the middle of March. The first spring arrivals at Jaffa appeared on 1. iii., in which locality they bred freely.

S. c. affinis Blyth.

One was obtained on 3. ix. Nicoll informs me this race occurs not uncommonly during spring and autumn in Egypt every year.

Sylvia melanocephala.

S. m. momus (Hemp. & Ehr.).

A few were seen throughout the year in the gardens at Rafa, Khan Yunus, and Gaza. Common in the coastal plains

of southern Palestine and in the Shephelah wherever there was suitable bush country. Not observed on the main Judæan ridge. A common resident in the southern parts of the Jordan Valley. It breeds freely on Mount Carmel.

Of fourteen obtained, eleven males have wings varying from 54 to 56 mm., and three females have wings of 54 mm. The ring round the eye is dark brick-red in live birds. Iris bright brown, duller in the immature bird.

They are shy but inquisitive birds. They are bad skulkers in cactus hedges, but will sometimes fly out to a tree, where they become very restive. They invariably, when in bushes, keep close to the ground, and I have never seen one more than three or four feet above the ground. In the Shephelah they abound in the bushes, and if the observer keeps still the small white-breasted bird appears like a Jack-in-the-box to have a look round, and as quickly dives back again, to reappear in a minute or so. The white terminal bars to the tail are very noticeable in flight. The alarm note is either a sharp "tick, tick," or a continuous cricket-like sound not unlike that of the Grasshopper Warbler.

***Sylvia ruppelli* Temm.**

Only observed on autumn passage at Rafa from 5. ix. to 20. x., when it was scarce and no adult males were seen. A female was obtained on Mount Carmel on 22. iv.

***Agrobates galactotes*.**

A. g. galactotes (Temm.).

A very plentiful summer visitor to all the gardens in the coastal plain from Rafa north to Carmel. No records from the Judæan highlands or the Jordan Valley, though it may occur in both districts.

Breeding birds usually arrive during the first or second week in April, and lay throughout May and in early June. Towards early August the adults begin to leave, and by the last day of August the whole lot have left.

The nest is placed low down in an orange tree, in a cactus hedge, or often on a stump near a stream. It is a large untidy structure, measuring some 8 inches across, the cup

being $2\frac{1}{2}$ inches in diameter. The platform consists of roots, straw, twine, grass and bent-stalks, the cup being lined with cotton-waste, a few feathers, some fine grass, and flower-seeds. Several had a partial horse-hair lining. Clarke notes that out of twenty nests found only three contained snake-skin.

When breeding, the parents display great anxiety, hovering in a very beautiful manner over the nest, diving madly into bushes, and hopping into the open with jerking tail. They are normally the reverse of shy, and utter their lovely song from a topmost branch or telegraph-wire. They often feed in the open, jerking their terra-cotta tails erect with a curious forward flicking of the wings and contraction of the head and neck.

Scotocerca inquieta.

S. i. inquieta (Cretzschm.).

Only seen at one place—in the Judæan hills, about ten miles north of Jerusalem, where one was obtained on 24. x. It does not differ from Egyptian and other Palestine examples which I have examined.

Prinia gracilis.

P. g. palestine Zedl. J. f. O. 1911, pp. 106–110.
Palestine and Asia Minor.

In this race the upper parts are browner and paler than in *P. g. delta* from the Nile Delta, specimens from Suez appearing to be intermediate. Sladen (Ibis, April 1919) refers this race to *delta*, but notices the difference which has given it subspecific rank.

Locally common and resident in the following localities: Lower Jordan Valley and north end of the Dead Sea, the valleys of the Shephelah from Jibrin north at least for twenty miles, in the coastal plain at Askalon, Jaffa, Ramleh, and behind Acre. A few on Mount Carmel.

A nest with three eggs was taken on Mount Carmel on 23. iv., and another with four eggs on 12. v. at Ramleh, both clutches being fresh and of the pink type. The nest is composed of coarse bents and stalks, thickly lined with thistle-

down. Outside measurements, 130 mm. deep and 65 mm. diameter : the entrance at the side of the top being 30 mm. in diameter. Young able to fly were observed as early as 27. iii., and young were again found in the nest on 26. vi.

Of seven obtained, the wings of four males vary from 42 to 44 mm.

Cisticola cisticola.

C. c. cisticola (Temm.).

A locally common resident at Amwas (Emmaus), near Jaffa, Ramleh, and Yebna, preferring reeds and generally marsh-land. Sladen took fresh eggs at Yebna on 20. vi. Not seen in the Jordan Valley.

Crateropus squamiceps.

C. s. squamiceps (Cretzschm.).

We only found this bird at the north end of the Dead Sea, on both sides of the Jordan, extending west to Jericho, north to twelve miles from the mouth of the Jordan, and south on the west coast of the Dead Sea for ten miles.

In the Jericho Valley nests were found high up in the fork or on the crown of a thorn tree. Eggs were laid about the middle of April, the clutch being usually five, sometimes seven or even nine. Their colour was an intense pale blue.

***Turdus pilaris* L.**

A winter visitor in small numbers, being obtained as far south as Rafa on 18. xi., before which date it was never seen. Not seen after 27. ii.

Turdus philomelos.

T. p. philomelos Brehm.

The Song-Thrush appeared on autumn passage at Rafa on 29. x., after which date it was fairly common but very wild, many passing further on, but a good many remained during December and January. A very common winter visitor to the Shephelah and coastal plain, it had nearly always gone north by 28. iii., though an odd bird could be seen till the middle of April.

Turdus merula.

T. m. syriaca Hemp. & Ehr.

A fairly common but secretive winter visitor to southern Palestine, the first arrivals—three cocks and two hens—being noted at Rafa on 24.xi., and from that date a few could be usually found in the gardens. Seen at Hebron in the snow on 8.i., and fairly common in the coastal plain during December and February. It left about 11.iii., though one was seen on Mount Carmel on 24.iv. Two adult males obtained have wings of 126 and 130 mm.

***Monticola saxatilis* (L.).**

A pair of adult birds were obtained on the High Lebanon on 1.vii, and really come outside the scope of this paper. Not observed in southern Palestine.

Monticola solitarius.

M. s. solitarius (L.).

A bird of passage in small numbers to southern Palestine, the first autumn arrival at Rafa being noted on 21.ix. It was fairly common in the first week of October, but was not seen after 16.x.

A few also winter in the Shephelah and coastal plain, being obtained on 26.xii. and 7.i.

The four specimens obtained agree with birds from southern Europe and Algeria.

Cœnanthe cœnanthe.

C. æ. cœnanthe (L.).

A common bird of passage in southern Palestine on both migrations. In autumn the first arrival appeared at Rafa 6.ix. and proved to be a young cock. Several were seen on 18.ix., after which date they became fairly common till the end of October, the last being seen on 23.xi.

On spring passage at Ramleh the birds were first observed on 14.iii., the passage lasting till 25.iv. On spring passage they are spread over the whole country from the Jordan to the coast.

This species breeds on Hermon, Lebanon, and the higher ground near Galilee.

Of eleven specimens five adult males compare well in colour with birds from continental Europe, but the culmen is slightly longer, ranging from 17 to 19 mm., whereas in most Continental birds the culmen varies from 16 to 17 mm. I do not consider this sufficient to justify the race "*rostrata*," which name I consider should become a synonym of the typical race. *Æ. æ. argentea* Lonnb. is, however, a good race with lighter mantle, more white on the forehead, and longer wing, though not so long as in *Æ. æ. leucorrhoa*.

The wings of five adult males obtained vary from 94 to 98 mm.

***Enanthe deserti*.**

Æ. d. deserti Temm.

A female shot at Rafa on 17.xi. belongs to the western race. Not otherwise seen.

***Enanthe hispanica*.**

Æ. h. melanoleuca (Güld.). (= *Sax. hisp. xanthomelæna* Hemp. & Ehr.)

Breeds throughout southern Palestine and northern Sinai, from Mount Carmel south and east to the Jordan Valley. Clutches of five and six eggs were taken on Carmel on 23. iv. and 26. iv. respectively, the former being well-speckled with rusty spots, forming a distinct zone at the base of one egg, whilst the second clutch have fewer and smaller freckles of rust, mostly at the larger end. Clarke found six fresh eggs near Gaza on 4.v., and young were being fed at Belah on 18.vi. In each case the nest was placed under a ledge of rock, and was composed of coarse roots and bents, thickly lined with horse-hair.

In early September birds commenced moving south. They were scarce after 28.ix., the last seen being an adult male on 15.x. In spring they commence arriving in the first ten days of March, and are common by 21.iii.

Of twenty adult males obtained fifteen are black-throated and five are white-throated.

***Ænanthe pleschanka*.**

Æ. p. pleschanka (Lepech.).

An unsexed bird obtained at Rafa on 29. x. Not otherwise seen.

***Ænanthe finschii*.**

Æ. f. finschii Heugl.

The resident Chat of the hills of southern Palestine, being only subject to local movement in winter. It was most plentiful on the hills between Hebron and Beersheba in December. None were seen near Jerusalem, but it was plentiful in the Shephelah in winter and summer.

An adult male, which made G. H. Q. Camp its winter quarters, arrived on 29. x. and remained till certainly late January, not confining his movements to the Camp only, but to a certain small piece of rough ground some half-acre in extent, which he never left.

***Ænanthe isabellina* Cretzschm.**

This species was fairly common round Belah and Rafa from June to August, but no nests were found. The autumn passage commenced on 8. ix. and began to finish about 24. ix. None were observed from 5. x. to 4. xi., but a few were seen from the latter date till early January and possibly later. It is probable that these winter birds come from a different locality to the summer and autumn birds. None were seen in the Judean highlands, the Shephelah, or coastal plain north of Gaza at any season.

***Ænanthe lugens*.**

Æ. l. lugens Licht.

Apparently confined in southern Palestine to the barest slopes and wildernesses of the Jordan Valley, where it appears to be resident. It usually nests from the middle of March to the end of May, the nest being in a hole or under a ledge of rock and made of fine grasses and roots, lined with a little hair and a few feathers. The normal clutch is five.

Two young birds obtained on 2. iv. are of especial interest.

The male has the crown and nape dull fawn, each feather edged with brown. The back is black, each feather edged with fawn, the whole giving a mottled appearance. The female has the head and nape russet-fawn, and only slightly paler than the back. Both birds are undoubtedly in nestling plumage, and it would therefore appear that this form in its nursery plumage resembles *Æ. l. halophila* of N.W. Africa, in which race the plumage of the adult female differs from that of the adult male, whereas in *Æ. l. lugens* the adult plumage is similar in both sexes.

Æ. l. persica Seeb.

I agree with Selater and Praed in considering this bird a subspecies of *lugens*.

A specimen obtained in the Jordan Valley on 11.xi. has the top of the head much darker than in typical *lugens*, with a much broader black subterminal tail-bar. The under tail-coverts are, however, not darker than in *Æ. l. lugens*. This specimen, though undoubtedly referable to *persica*, tends towards typical *lugens*.

***Saxicola rubetra*.**

S. r. rubetra (L.).

S. r. spatzi (Erl.).

Of four specimens brought home, one is of the typical western race and was obtained on 9.ix., the other three are of the Dalmatian form, the breeding range of which probably extends much further east than its typical locality.

Nicoll informs me that both forms occur on passage in Egypt.

Whinchats are only birds of passage in southern Palestine, arriving in autumn on 8.ix., becoming common about 15.ix., and again scarce on 29.ix. Last seen on 30.x.

The only record of the spring passage is of one specimen (*spatzi*) obtained at Rafa on 1.v.

***Saxicola torquata*.**

S. t. rubicola (L.).

A common winter visitor. At Rafa the autumn migration

commenced on 21.x., when a single adult female appeared, after which a few females and birds of the year appeared. Their numbers increased about 23.xi., when they became very common, adult males being the last to arrive. They were plentiful throughout the winter in the coastal plain, the Shephelah, the Judean highlands, and the Jordan Valley.

They commenced moving north in the first few days of February, and except for one seen on 26.iii. they had all gone by 21.iii. It was noticed that in winter birds were in pairs, though the southern migration appears to be separately undertaken.

Of the six specimens brought home, none have any white at the base of the tail, and in the two males the upper tail-coverts are flecked with black. The wings of two males measure 66 and 67 mm., and those of four females from 63 to 66 mm.

Phœnicurus phœnicurus.

P. p. phœnicurus (L.).

Common on autumn passage in southern Palestine, where perhaps a few remain for the winter. At Rafa the first to appear was an adult male on 12.ix. The birds became fairly common by 19.ix., and were plentiful from 23.x. to the end of the month. They were scarce throughout November and very few were seen in December. No record was made of the spring passage.

P. p. mesoleuca (H. & E.).

One example of this race was obtained on 1.ix. at Khan Yunus. Not otherwise observed.

Phœnicurus ochruros.

P. o. gibraltariensis (Gm.).

A fairly common winter visitor to southern Palestine, the first—an adult male—being seen at Rafa on 9.xi., but the majority were confined to the Judean highlands, where I saw many, on 7.i. at Hebron, sitting disconsolate on stone walls, but looking beautiful against a snow-clad country. The food of this bird was, as far as I could judge, almost confined to a small black ant.

Cercomela melanura.

C. m. melanura (Temm.).

Confined to and resident in the Jordan Basin, but does not descend to the actual bottom of the valley. Of nine obtained at and near Jericho the wings of three males vary from 75 to 82 mm., and those of five females from 74 to 82 mm. Half-fledged young were found on 2. iv.

Luscinia luscinia (L.).

The Sprosser was observed on autumn passage at Rafa from 20. viii. to 8. x., the bulk passing from 8. ix. to 15. ix.

On spring passage it was obtained on Mount Carmel on 13. iv. and 16. iv.

Luscinia svecica.

L. s. volgae (Kleinschm.).

The only two examples we brought home belong to this race.

Bluethroats began to appear on autumn passage at Rafa on 18. x., when an adult male was shot, and from that date onwards a few could always be found till 7. xi., when they all disappeared. Some new arrivals appeared on 25. xi. but passed on at once.

I saw one in the Shephelah on 1. i., and Sladen obtained birds (sub nom. *L. s. svecica*) near Jaffa on 28. i. and 28. iii., so it is probable that a few winter in southern Palestine, and it is possible that these winter birds are the typical race, whilst the passage migrant is *volgae*. Both forms occur commonly in Egypt in winter.

Prunella modularis.

P. m. modularis (L.).

An adult male was obtained at Ramleh in southern Palestine on 19. xi. Wing 69 mm. Second primary equals the seventh. Two others were seen on 22. xi. Tristram describes this species as a scarce resident in the Lebanon, and it is possibly the hill birds which wander down to the plains and lower ground in cold weather.

In comparing our Palestine specimen with a large series

of *P. m. modularis*, *occidentalis*, and *orientalis*, I was unable to discriminate between the shade of colour said to distinguish the three races one from the other. Rumanian and other Continental specimens agree perfectly with British, whilst I could detect no possible difference between *P. m. modularis* and *P. m. orientalis*.

Now in *P. m. modularis* the second primary is always said to be longer than the seventh, in *occidentalis* it is never longer than the seventh, and in *orientalis* it about equals the seventh. I find these formulæ to be only the case among the majority and do not hold good in a large series, and I can produce both British and Continental birds with second primaries equal to the seventh. I therefore prefer to unite both *orientalis* and *occidentalis* with the typical Continental race, as I doubt if subspecific value is of much use, and may be misleading, where in a large series one cannot distinguish the different races.

***Erithacus rubecula*.**

E. r. rubecula (L.).

A common winter visitor to southern Palestine, whilst many are birds of passage. First arrival at Rafa was noted on 3. xi., after which date they became generally distributed until by the end of November they were abundant both in the plains and on the Judean highlands, where I was delighted to see one on Christmas Day in the Temple area in Jerusalem, and another in the snow at Hebron on 7. i. A few were seen at the north end of the Dead Sea in November.

On spring passage they were noted from 6. iii. to 21. iii.

The two examples brought home agree with Continental specimens.

***Chelidon rustica*.**

C. r. rustica (L.).

Only noted on passage in spring and autumn. At Rafa large flocks passed from 5. viii. to 14. viii. and again from 1. ix. to 7. ix., all travelling parallel with the coast and heading for Egypt, the last parties containing many *C. r. transitiva*. From 1. x. to 15. x. this race far out-

numbered *transitiva* on passage, and only a few were seen after 27. x. None seen after 30. x.

The spring passage at Ramleh lasted from 16. iii. to 8. iv.

C. r. transitiva Hart.

Nowhere common as a resident. Breeds at Rafa, Khan Yunus, Belah, and on the desert between Rafa and Beersheba, using wells or underground cisterns, one nest with four eggs being found in a cistern within two feet of a Little Owl's nest with two eggs. Breeds sparingly throughout the coastal plain and Judean highlands, and last year's nests were seen in Beersheba.

I was much surprised to find this bird passing south-west at Rafa in considerable flocks from 22. ix. to 28. x., there having been a large gathering of young birds about Khan Yunus since 23. viii. In late November and early December large numbers of birds arrived for the winter in the plains of southern Palestine which seemed intermediate between *H. r. rustica* and *transitiva*.

On spring passage at Ramleh large flocks were seen passing north from 31. iii. to 6. iv., while a few were seen on passage on Mount Carmel on 22. iv.

Tristram states that this race does not occur north of the Lebanon. Where, then, do all these passage migrants come from? And where do they go? It will probably be found that they spread out all over Syria in summer and occur throughout Arabia and N.E. Africa in winter. Their southern breeding range probably also extends south of Palestine, for one was shot in Sinai on 13. iv. (Auk, July 1915).

It may be interesting to note that *C. r. savignii* breeds on the east bank of the Suez Canal, where I found two nests at Kantara in May.

This very distinct geographical race is intermediate between *C. r. rustica* and *savignii*, but appears to merge into *C. r. rustica* on its northern limits and in Cyprus. The young bird in nestling plumage is very pale and whitish on the under parts, and I could only detect traces of the true

"*transitiva*" colour. In the same way the nestling plumage of *savignii* is usually much paler than in adults, and closely resembles the true "*transitiva*" shade of red.

Chelidon daurica.

C. d. rufula.

Observed breeding on Mount Carmel, round Lake Galilee, and at Jerusalem and Jericho. Fresh eggs were taken on Mount Carmel on 23.iv. from the usual type of nest situated in a cave. Total length of nest 12 inches, length of neck 4 inches, outside diameter of neck $2\frac{1}{2}$ inches, diameter of nest $3\frac{3}{4}$ inches, inside diameter of mouth under 2 inches.

The fresh egg is very pale pink, which soon turns to white after being blown. None had any markings.

Four specimens were obtained on Mount Carmel on 27. iv., the wings of three males varying from 118 to 120 mm.

This bird is only a summer visitor to Palestine.

Hirundo urbica.

H. u. urbica (L.).

A few were observed on passage on Mount Carmel on 23. iv. The wings of two males obtained measure 108 and 109 mm. Not otherwise seen.

Riparia riparia.

R. r. riparia (L.).

R. r. diluta (Sharpe & Wyatt).

Only two Sand-Martins were brought home, one of the typical race shot at Ramleh on 23. iii. when on spring passage, and another which I refer to *R. r. diluta* shot at Shellal on 23. ix. when they were plentiful on autumn passage. The latter specimen compares well with birds from the Lena River, and the bird of the typical race agrees well with British specimens though it is rather on the dark side.

Sand-Martins, which I believe belonged to the Siberian race, were first seen at Rafa on autumn passage on 27. viii. and again on 2. ix. Several were observed from 17. ix. to 8. x., but none after 14. x.

Apus apus.

A. a. apus (L.).

One was obtained on autumn passage at Belah on 30. vii., where on that and the following day several flocks passed south-west. No other Swifts were observed on autumn passage.

A. a. marwitzi Reichen.

I refer a bird shot on Mount Carmel on 13. iv. to this race. Wing 175 mm. It is both paler and browner on the head than typical specimens, but not quite so pale as typical *pekinensis*. The bird agrees best with *marwitzi* from the Caucasus and Asia Minor as regards its head and forehead, but the chin is pure white.

Swifts of some sort commenced their northward passage in southern Palestine on 16. ii., though some were seen at Jericho on 12. iii. and 15. iii., but it is not certain whether the latter were not winter visitors or even residents. The northward passage in the coastal area increased towards the end of March, and continued to diminish throughout April, the last passage migrant being seen on 5. v.

Swifts bred at Ramleh, Jaffa, and Jerusalem.

Apus melba.

A. m. melba (L.).

Two were obtained at Shellal from a party on passage on 23. ix., and one on 4. x. at Rafa. These three specimens are all females with wings measuring from 191 to 202 mm. Their small size and the very much paler tint of the upper parts is remarkable ; I can find nothing like them in either the British or Tring Museums.

The Alpine Swift is a summer visitor to southern Palestine, arriving at the end of February and leaving from the end of September to early October. It breeds in the Mosque of Omar at Jerusalem, in the wilder ravines of the Jordan Valley, and possibly on Mount Carmel, where birds were seen on 22. iv.

Caprimulgus europæus.

C. e. sarudnyi Hart.

A pair were obtained at Rafa on 18.ix. and 19.ix. when resting on autumn passage. The colour of both birds is nearest that of *unwini*, but in the male the white spot on the first primary does not reach to the shaft, on the second primary it is confined to the inner web, whilst on the third primary it extends to both webs but is only 10 mm. wide on the shaft. Wing of male 186 mm., and of the female 173 mm.

Nightjars first appeared on passage at Rafa on 16.viii., and were occasionally seen till 30.x., but were never common. It is probable that they breed sparingly in southern Palestine, as birds were seen at Ramleh on 7.v. and on Mount Carmel on 23.iv.

Merops apiaster L.

An abundant but local breeding species from the Wadi Gaza north at least to Jaffa. Not observed nesting either in the Judæan highlands or in the Jordan Valley. Fresh eggs were taken at Jaffa on 20.v., birds having commenced to build on 20.iv. Young in the nest on 26.vi., and others were fully fledged by 27.vi.

The birds which bred near Gaza flocked at the end of July, both old and young travelling together, while all had left by 2.viii. After these breeding birds had passed, large flocks appeared on 28.viii. passing south-west, and this passage was almost continuous till 15.ix., when it abruptly ceased, and no more were seen except one large flock which passed over Rafa on 22.ix. travelling south-west at a great height.

The first spring migrants were noted at Ramleh on 3.iv., and flocks were passing north all day on 4.iv. This passage continued without interruption till 9.iv., after which it diminished, but a considerable movement was noted on Mount Carmel for four days from 20.iv. The breeding birds seemed to arrive with the first few flocks of passage migrants.

Merops persicus.

M. p. persicus Pall.

One was shot at Ramleh on 3.iv. when on passage. It breeds in banks in the Jordan Valley according to Clarke, and Tristram found a large colony in northern Syria at Jerablus on the Euphrates.

Upupa epops.

U. e. epops L.

Obtained 17.viii., 21.ix., and two on 14.iii. There is a very marked difference in the pale worn plumage of the bird shot on 17.viii., which is vinaceous isabelline, and the rich vinaceous brown of the freshly-moulted bird shot on 21.ix.

Hoopoes doubtless breed in Palestine, but we saw no sign of them. Autumn passage at Rafa commenced on 27.vii., when a few single birds appeared in the gardens. By 27.ix. they were fairly plentiful, and while at sea off Gaza I saw three single birds approaching the shore from the north and flying not more than a foot or so above the water. They became scarce after 1.x., and the latest record was on 13.x.

On spring passage at Rafa, they appeared on 2.iv. and continued passing till 10.iv. Two years later the spring passage at Ramleh commenced on 23.ii. and lasted till 5.iv. Several birds were seen in the Jordan Valley in the middle of March, but none anywhere in summer.

Coracias garrulus.

Two birds of the year were obtained on 30.viii. and 4.ix. The male has a wing of 195 mm. and the female 189 mm. The adult plumage beginning to show on the upper parts more closely resembles that of *semenowi* the eastern race, but the length of wing is nearer that of the typical western race. I therefore hesitate to refer them to either form pending more material from Palestine.

Rollers were not found breeding in southern Palestine, though one was seen at Belah on 12.vi.

The autumn migration commenced very early at Rafa, the first birds being seen on 31.vii., when four passed. From

that date their numbers gradually increased till late August, when they were very common everywhere, as many as twenty-three being seen sitting in a thorn tree in the desert. After 17.ix. the numbers gradually decreased, the last being seen on 24.ix. In the following year three belated birds were seen at Jerusalem on 20.xi., but this is exceptional.

The spring passage in southern Palestine commenced on 24.iv. and continued till 12.v., the bulk in flocks of from forty to seventy passing about 28.iv.

Ceryle rudis.

C. r. rudis (L.).

Common at the south end of the Jordan Valley in November, and a common resident at Jaffa and Haifa. None were obtained.

***Alcedo atthis* L. 1758 (Egypt). (= *A. ispida* L.)**

A. a. atthis L. (= *A. ispida pallida* Brehm.)

A common bird of passage through southern Palestine and a winter visitor to the coast, being seldom seen more than five miles inland, though one was seen at the north end of the Dead Sea in early November. The autumn passage commenced at Rafa on 1.viii., when quantities were seen on the sea-coast resting on rocks and passing west towards Egypt. By 15.viii. they were abundant on the coast from Gaza to El Arish, their numbers diminishing throughout September. Very few were seen either at Jaffa or Gaza in winter. No records were made of the spring passage and departure of winter visitors.

Halcyon smyrnensis.

H. s. smyrnensis (L.).

Not uncommon at the south end of the Jordan Valley, where it is resident. A few occur on the coast throughout the year, especially round Jaffa, only straggling as far as Belah in winter.

Dryobates syriacus.

D. s. syriacus (Hemp. & Ehr.).

A few pairs are resident in most clumps of trees in the Judean highlands and in the Shephelah. It was also observed near Lake Galilee in April. A female shot on 30. xii. had a wing-measurement of 129 mm.

Jynx torquilla.

J. t. torquilla L.

Four specimens were brought home, three autumn birds and one shot on 7. iii. They are all markedly grey on the upper parts, but can be matched by autumn birds from Algeria, Germany, and England. An examination of eastern Asiatic specimens (*japonica*) makes me doubt whether they can be separated from the typical European Wryneck. They are not always smaller, the wings of many ranging to 90 mm., and the plumage, so variable individually in this species, is scarcely distinguishable, while in most birds from the mouth of the Amur the plumage is identical with European birds.

The paleness of all the Palestine birds does, however, make me wonder whether central Asiatic Wrynecks may not be more liable to this pale phase than European or eastern Asiatic birds.

Common on both passages. First observed at Rafa in autumn on 2. ix., after which a few tired individuals could be found sitting disconsolate in gardens. Not seen after 18. ix., except once, on 25. x. Spring passage commenced at Ramleh on 6. iii. and lasted till 27. iii., when the bird was by no means rare.

Cuculus canorus.

C. c. telephonus Heine.

The five specimens brought home agree with this race as regards the lighter grey of the throat, but the barring on the under parts, though scarcely so narrow as in *telephonus*, is not so broad as in most specimens from western Europe, yet it compares well with some of them. The barring

on the under tail-coverts is, however, much narrower than in *C. c. canorus*, and agrees well with Himalayan specimens of *telephonus*.

A common bird of passage in southern Palestine, first seen in the autumn at Belah on 8. vii., and becoming common by 28. vii. It was scarce by 30. viii., the last seen being on 14. ix. All the Cuckoos observed and obtained were adults, except for four immature examples seen in the last few days of August.

The spring passage at Ramleh commenced on 13. iii. and continued till 24. iv., fewer birds being seen than in the previous autumn. It was not observed in summer, though Tristram describes it as a summer visitor, especially to the Jordan Valley. We never visited that valley in summer, and it will be interesting to know which is the breeding race of Palestine.

***Clamator glandarius* (L.).**

We did not observe this species, though it is undoubtedly a regular summer visitor to Palestine, arriving from early March. Sladen (Ibis, April 1919) saw one first at Jaffa on 25. iii.

***Otus scops* (L.).**

One was wounded on 19. ix. near Jaffa, but we failed to secure it. Not otherwise seen.

***Athene noctua*.**

A. n. glaux (Sav.).

A. n. lilith Hart.

Of the six Little Owls brought home, four from Rafa are referable to *lilith* and two from Ramleh to *glaux*.

The Rafa specimens agree with *lilith* from North Syria and others from Palestine in the Tring Museum, but the two shot at Ramleh on 20. iii. and 19. xii. are identical with *glaux* from Egypt. I also saw typical *lilith* and typical *glaux* nesting together near Gaza and Beersheba, whilst intermediate birds were common. It would therefore appear

that a broad belt of country bounded on the north by a line Jaffa-Jerusalem and in the south by a line Gaza-Beersheba, is inhabited by a Little Owl, some of which are typical *glauca*, others typical *lilith*, and others intermediate in colour. There is one of the intermediate birds in the Tring collection, labelled "Jerusalem, in summer."

Little Owls are plentiful residents throughout the country, both in the desert country, in villages, and gardens. Their usual nesting sites are down a well, in an underground cistern, or, in the Shephelah, among boulders.

***Asio flammeus* Pontopp. (*Asio accipitrinus* (Pall.))**

Four were seen on passage on the desert near Rafa on 2. xii. Sladen obtained one at Yebna on 10. i.

***Tyto alba*. (*Strix flammea* auctorum.)**

T. a. alba (Scop.).

From late October to early December there was a considerable movement of these birds near Rafa and Gaza. The earliest record was on 1. x., when one was picked up dead near the coast at Rafa, and many were caught by our troops in the trenches opposite Gaza in late October and early December. The latest record is on 4. xii.

A male picked up on 1. x. has a wing measuring 284 mm. Lower parts and legs pure white, except for a slight yellow tinge on the upper breast, every feather having a narrow shaft-stripe on the middle part only of the shaft, and a small drop-shaped brown fleck at the tip. The only other Palestine specimen I have examined is very similar, but with fewer markings on the under parts.

***Falco peregrinus*.**

F. p. pelegrinoides Temm. (*F. barbarus* auct.)

An adult male shot at Shellal on 3. xii. was the only record. Wing 279 mm.

***Falco biarmicus*.**

F. b. tanypterus Schleg.

Fairly common on autumn passage in southern Palestine

from Gaza to Beersheba, being first observed on 27. viii., after which date it became fairly common, small lots of five being often seen together. Towards the end of November it became scarce. Observed near Jaffa and in the Shephelah in late December.

On one occasion a female was seen to stoop at and knock feathers out of a Hobby.

Two males obtained at Rafa have wings measuring 312 and 334 mm.

Falco subbuteo.

F. s. subbuteo L.

Fairly common on autumn passage at Rafa, being first observed on 1. x., when it was common for about ten days and then disappeared. Single birds were seen on 23. x., 6. xi., and 23. xi. Not noted elsewhere.

An immature female obtained at Rafa on 1. x. has a wing of 248 mm.

Falco columbarius.

F. c. regulus Pall.

First seen at Rafa on autumn passage on 2. xi., after which it was noticed daily till early January, but the numbers decreased at the end of November. Several were seen in the coastal plain north of Gaza and in the Shephelah in late December.

A pair obtained compare well with birds from England. Wings of male and female 190 mm.

Falco tinnunculus.

F. t. tinnunculus L.

The autumn passage commenced at Rafa on 28. ix., when several large parties appeared and passed on. Another influx occurred for the three days following 27. x., when parties could be seen hawking insects at about 300 feet. The crops of those killed contained lizards, spiders (*Galleodes*), and flying ants.

F. t. rupicolaeformis Brehm.

This is the breeding race all round Gaza and Rafa, the darker and richer upper parts easily distinguishing it from the typical migratory form. Males with wings of 243 and 246 mm. were obtained at Rafa on 25. vii. and 28. ix.

Kestrels were breeding near Jericho in the middle of March and near Acre, but no specimens were obtained. It will be interesting to know how far into Palestine the Egyptian race extends.

Aquila heliaca.

A. h. heliaca Sav.

The Imperial Eagle is a sparse resident round Gaza and Rafa, but from its conspicuous size is noted nearly daily on the desert.

Hieraëtus pennatus (Gm.).

A female Booted Eagle with white under parts was killed near Ramleh on 3. i. Wing 381 mm. Another, now in the Cairo Zoological Gardens, was obtained at the same place.

Buteo ferox.

B. f. cirtensis (Lev.).

An immature male was obtained on 14. ix. at Rafa and an adult female at Shellal on 10. ix. Wings 366 and 393 mm. respectively. These specimens have been compared with a large series from North-west Africa, and there is no doubt that this race extends at any rate to southern Palestine as a migrant.

None were noticed in summer. First seen at Rafa on 8. ix., and after 24. ix. large numbers arrived. About 8. xi. a further influx arrived, and as many as twenty could be seen sitting together roosting in the early mornings. There was a marked decrease about mid-December, but near Gaza on 18. xii. the telegraph-lines were thick with them, as many as forty-five being counted in a mile.

Dead animals were invariably refused by this bird, whose diet consisted of rats, lizards, etc.

The flight is graceful but heavy, and its peculiar markings on the upper and under surface of the wing, which, when in flight, looks as though a white circular patch has been painted there, gave it the local name of the Aeroplane Bird among the troops. Individuals varied much in colour, some being dark throughout and others having an almost white head with cream-coloured body and tail. It is more than likely that if a large series had been collected, not only this race but *Buteo ferox ferox* as well as *Buteo b. zimmermannae* and *ruficenter (desertorum)*, would have been obtained, as they must pass this way on their autumn passage.

Circus æruginosus.

C. æ. æruginosus (L.).

An adult female was obtained near Ramleh on 28. x. Wing 406 mm. The autumn passage at Rafa commenced on 21. xi., when a few arrived, both young and adults being seen. A bird noticed at Gaza on 25. xi. had an almost pure white crown and nape, with apparently no trace of cream-colour.

Sladen states that this species breeds near Yebna, which would seem to be the case, as Tristram observed it in Palestine throughout the year.

Circus macrourus (Gm.).

An adult male and female were obtained at Rafa on 29. x. and 17. ix., with wings measuring 332 and 364 mm. respectively.

Only observed on autumn passage at Rafa from 9. ix. to early November, when it was not common. A few re-appeared at Rafa and in the coastal plain north of Gaza in December and January.

Accipiter nisus.

A. n. nisus (L.).

Only observed as a winter visitor to the Lower Jordan Valley, where it was not rare. A female obtained on 10. xi.

has a wing measuring 240 mm., and compares well with other typical examples from Asia Minor.

Milvus milvus.

M. m. milvus (L.).

The Red Kite appeared about Rafa in small numbers on 26. x., after which a few were seen in the coastal plain and in the Judæan highlands, but they were not seen in any numbers except at Hebron in December. They were more shy than *Milvus migrans*.

Milvus migrans.

M. m. migrans (Bodd.).

The Black Kite is a plentiful resident throughout southern Palestine, and was breeding in palm trees at Belah in June. A large influx arrived at Rafa on 27. ix. and remained till 15. x., after which the numbers became normal.

It appears that *M. m. egyptius* occasionally occurs in northern Sinai, for we frequently saw birds which we took for this race. Tristram records them as the Kite of the Jordan Valley and *M. m. migrans* as a summer visitor to Palestine.

***Circaëtus gallicus* (Gm.).**

One shot at Rafa on 22. viii. was the only specimen identified for certain. Its crop contained two chameleons. Wing 504 mm.

Gyps fulvus.

G. f. fulvus (Habl.).

A few were seen in June and July round Gaza and on the desert towards Beersheba. A party of twenty-four were noted at Beersheba on a dead camel on 3. xii. None were obtained.

Neophron percnopterus.

N. p. percnopterus (L.).

A summer visitor in scattered pairs round Rafa, Gaza, and in the coastal plain, arriving in early March and leaving

at the end of October. A party of thirty seen at Ramleh on 16.x. were on passage. An adult female shot on 7.iii. at Ramleh had a wing measuring 519 mm.

On 3.ix. at Rafa an adult bird soaring at about 2000 feet was mistaken by our anti-aircraft batteries for an enemy aircraft, his white under sides glistening in the morning sun, and making him look just like an aeroplane at about 15,000 feet. It was not till he flapped his wings in response to a rather too-close shell that the error was discovered.

Ciconia ciconia.

C. c. ciconia (L.).

Common on spring passage, but not seen in anything like the same numbers in autumn.

The earliest record in spring is on 4.ii., when many hundreds were seen at Yebna; again on 8.iii. a few passed north, but the main movement did not commence till 15.iii., when about two thousand appeared near Gaza in 1917, and passage was continuous till about 30.iii. Many were seen at Jericho on 2.iv. and at Samakh at the south end of Galilee on 24.iv. After this only belated parties were noted till 3.v., on which date Sladen found many birds dead on the Wadi Gaza. This seems a disaster not uncommon to the White Stork which passes north too late or travels south too early (*cf.* Novitates Zool., Feb. 13, where large flocks, half-dead from thirst, descended in the Sahara). Occasional flocks were seen as late as early June.

The only records of autumn passage are of a few small parties seen flying west along the coast near Rafa on 28.vii., a few at Beersheba on 4.ix. and 13.xi., and some at Ramleh on 19.x. No main passage was observed.

We found no evidence of breeding, though Tristram asserts a few remain to nest.

***Platalea leucorodia* (L.).**

None were obtained. Single birds or pairs were seen near Gaza from 28.iv. to 11.v., and from 26.xi. to 29.xi.

Plegadis falcinellus.

P. f. falcinellus (L.).

A female was obtained in Central Palestine on 22.iv. Not otherwise seen.

Ardea cinerea.

A. c. cinerea L.

A few were seen near Belah in early June and near Carmel on 26.iv. These Herons feed largely on the desert and far from water, probing for lizards and mice. I have noted the same habit in Baluchistan.

A slight autumnal movement was noted on the coast near Rafa from 24.viii. to 14. x.

One was seen near Gaza on 13.xi.

Ardea purpurea L.

None were obtained. Occasional at Belah from 11.v. to 30. vi. A party of thirty was seen in the Wadi Rubin on 14. x.

Egretta alba (L.).

None were obtained. Single birds were seen at Belah from 2. vi. to 14. viii.

Bubulcus ibis (L.).

None were obtained. Occasional in suitable country near the coast in May and June.

Ardeola ralloides (Scop.).

Not uncommon in suitable places from 21.iii. to 2.vi. One was obtained on 13. x. in the Wadi Rubin.

Nycticorax nycticorax.

N. n. nycticorax (L.).

An adult male was obtained at Shellal on 18.ix. Wing 300 mm. Others were seen in the coastal plain on 16.iii., and again from 26. viii. to 27. xi.

Ixobrychus minutus (L.).

Not obtained. Eleven birds were found resting in a desert garden on 4.ix. On being disturbed they made off in a

southerly direction loudly protesting, and ascending to some 2000 feet before deciding on their direction.

They were plentiful in the Brook Kishon in January and February and near Ramleh in May.

***Botaurus stellaris*.**

B. s. stellaris (L.).

None preserved, but several shot. Observed near Belah on 11. v. and 14. v., while a few could always be found in suitable reeds on the coastal plain in winter. Sladen found evidence of possible breeding.

***Phœnicopterus ruber*.**

P. r. antiquorum Temm.

A few single birds and small parties were seen near the coast from May to September.

***Tadorna tadorna* (L.).**

A pair was seen at the mouth of the Wadi Gaza on 7. vi. No other record.

***Anas platyrhyncha*.**

A. p. platyrhyncha L.

A scarce winter visitor, only seen near the coast in November and December.

***Anas crecca*.**

A. c. crecca (L.).

Common in suitable localities in the coastal plain, the earliest arrival being a young drake on 10. ix.

***Anas querquedula* L.**

The Garganey was fairly common on spring passage in the coastal area from early April to 3. v. Obtained on autumn passage on 7. viii., when it was scarce.

***Anas penelope* L.**

Scarce. Three were seen near Gaza on 13. xi., and small parties throughout December on the Wadi Gaza.

Anas acuta.

A. a. acuta L.

A not uncommon winter visitor to the coastal plain, being seen from 27. x. to 11. v.

Spatula clypeata (L.).

A common winter visitor to the coastal plain and the Jordan Valley, where eleven were seen at the north end of the Dead Sea in early November. The first arrivals on the coast were a pair of adults on 10. x. at the mouth of the Wadi Gaza, the cock being in almost full eclipse. The last seen was on 15. v.

Nyroca ferina.

N. f. ferina (L.).

A party of thirty was seen on the Julie Marshes on 16. iii. Not otherwise observed.

Nyroca fuligula L.

A female was obtained at Gaza on 7. vii. Others were seen in December and March.

Bucephala clangula.

B. c. clangula (L.).

A young drake was obtained at Shellal on 25. xi., and Sladen secured a female at Yebna on 20. i. Not otherwise seen.

Podiceps cristatus.

P. c. cristatus (L.).

An adult female in breeding-plumage was shot on Lake Galilee on 19. ii. These birds do not, according to Tristram, breed there, but probably do so on Lake Huleh.

Columba livia.

C. l. palestine Zedl.

A common resident in the Shephelah and in the Jordan Valley. All birds seen had an entirely grey lower back. They invariably breed either in a disused well or in a cave.

Columbaenas.*C. ω . enas* L.

An abundant winter visitor to the southern parts of southern Palestine, watering in thousands in the Wadi Gaza from November to January. The first arrivals appeared in small parties of four to twenty on 21.x. and caused considerable excitement among the troops, who suspected Turkish Carrier Pigeons. By 2.xi. their numbers had reached their height. Observed passing north at Ramleh on 2.iii. in flocks of three to four hundred. A female shot on 3.xii. has a wing of 214 mm. and agrees well with British specimens.

Streptopelia turtur.*S. t. turtur* (L.).

A common summer visitor and bird of passage in southern Palestine, the first nest being found at Ramleh on 11.v. It appears to arrive from the end of April, and continues passing north till the middle of May.

The autumn passage commenced at Rafa on 28.viii., and the birds were plentiful on 6.ix. and throughout September. After 10.x. they were scarce, the last being seen on 18.x.

Three autumn examples brought home are of the typical race and not *arenicola*. No breeding birds were obtained, and it is probable they will be found to be *arenicola*.

Streptopelia decaocto.*S. d. decaocto* (Friv.).

A common resident north of the line Gaza-Hebron. It also appears to be an abundant winter visitor to southern Palestine, for large flocks passed north at Ramleh from 19.iii. to 29.iv. None were seen in the Judæan highlands in winter, but it is common at that season in the Jordan Valley.

In the Jordan Valley it breeds from the last few days of April, making a typical nest either on the ground or in a very low bush, but never more than a few inches from the ground.

Pterocles orientalis (L.). (= *arenarius*.)

Several small parties watered regularly in the Wadi Gaza at Shellal and near Beersheba during August and early September, but they had all gone by 17.ix. A few returned from 27.ix. to 30.ix.

Pterocles alchata.

P. a. caudacutus (Gm.).

Scarce. A few were seen near Shellal on 4.vi. and in early August. They were watering in large numbers near Beersheba in late September. An occasional pack watered at intervals of some days at Shellal during November and December. On 14.xi. a solitary bird was shot from a flock of Ringed Plover. Its more rapid flight and clumsier movements completely upset the wheeling of the Plovers, and its determination to fly in the centre of the flock caused them much embarrassment. It was in full change from immature to adult plumage.

A cock shot at Shellal on 20.viii. is very light-coloured on the chest, but can be matched by specimens from Tunis and from Lenkoran on the Caspian. It is remarkable that both the darkest and lightest birds in the Tring collection are from Lenkoran.

Pterocles senegallus (L.).

The common Sand-Grouse of southern Palestine and probably resident, as it was there from June to December, watering in hundreds near Shellal in the evening only. After the first heavy rain in the middle of December it watered on surface pools in the desert.

Five specimens obtained agree with birds from Algeria and the Nile Valley.

Alectoris græca.

A. g. sinaica (Bp.).

Four birds from the Shephelah and the Jordan Valley near Jericho are similar. They compare well with birds examined from Engedi on the west shore of the Dead Sea

and from the Judæan hills south of Jerusalem. We can therefore assume that the same subspecies inhabits the Lower Jordan and Dead Sea depressions, the Judæan highlands, and the Shephelah.

They agree, so far as one is able to judge, with the original description of *sinaica* (J. f. O. 1858, p. 31), which Dawydoff states occurs also in western Palestine, but he seems to refer the bird from the Ghor or Jordan and Dead Sea depression to *margaritæ*, which he says has a pure grey crown. Now the only Chukar which has anything approaching a pure grey crown is *weræ* from southern Persia, and the Palestine birds are certainly not *weræ*, with which I have compared my specimens. It is also clear that the birds from the Dead Sea and Jordan Valley have not the pure grey crown which Dawydoff assigns to them: we must therefore assume that his expression "pure grey crown" is a natural exaggeration for a bird which has a predominance of grey on the crown. Palestine birds are also much darker in every respect than *weræ*. I am therefore of the opinion that *margaritæ* is synonymous with *sinaica*, the latter race extending from southern Sinai to the Dead Sea and southern Palestine. Birds from southern Sinai are referred to *sinaica* by Zedlitz (J. f. O. 1912), the males having wings measuring 155–156 mm., and the females 147–155 mm. Our Palestine birds run larger, four males having wings of 160, 167, 171, and 172 mm. Two males in the Tring collection from Engedi on the Dead Sea and from the Judæan highlands have wings measuring 158 mm.

A bird from Mount Carmel is darker than southern Palestine birds, and is probably a new race, but only one female with a wing of 158 mm. was brought home. It has no trace of grey on the head.

The Chukar is common in the Judæan hills and the Shephelah, ranging south to near Beersheba and east to the lowest levels of the Dead Sea and Lower Jordan depression. Eggs were found in the Jordan foot-hills on 5.iii., the clutch

being seven. Fully-grown young were seen in the Judæan hills on 3.vii.

On Mount Carmel there were about seven breeding pairs in April 1919.

***Ammoperdix heyi*.**

A. h. heyi (Temm.).

Not seen outside the Jordan depression; where it is not uncommon near Jericho, and in the Wadis Auja and Kelt.

The wings of four males obtained measure 122, 123, 125, and 129 mm., while the wing of one female measures 122 mm. They do not agree with the birds from Egypt.

***Francolinus francolinus*.**

F. f. francolinus (L.).

An adult male obtained near Jericho on 16.x. agrees with specimens from the Upper Euphrates and Asia Minor. Wing 180 mm.

Not seen out of the Jordan Valley, where it is plentiful at the junction of the Wadi Zimrin with the Jordan.

***Coturnix coturnix*.**

C. c. coturnix (L.).

Abundant on both passages, a few remaining for the winter. On autumn passage on the north coast of Sinai, between El Arish and Rafa, the first arrivals appeared on 18.viii. in small parties. By 30.viii. the passage had increased, and three hundred and eighty birds were netted at El Arish in a morning. During the first week of September the passage reached its zenith, and over eleven thousand birds were netted at El Arish. At Belah during the first seventeen days of September, never less than three hundred and forty-nine or more than five hundred and sixty-eight birds were taken daily in a single net, but on 18.ix., after a strong north-westerly gale, only forty were taken. On 19.ix. only eight birds were comprised in the catch, and the passage ceased on 20.ix.

They arrived from the north in the very early hours of the morning, and the passage was always completed by 9 A.M., birds usually settling at once, or only flying a very short distance inland. Their flight both over the sea and over the desert seldom reached more than ten to twenty feet above ground or water-level. Migration parties varied from twelve to thirty, being usually about fifteen. Only exhausted birds remained near the coast, the bulk resuming their journey on the following evening.

Odd birds were seen in the coastal plain of southern Palestine throughout the winter.

Spring passage was noted at Ramleh from 12.iii. to 6.iv., but the passage was not so marked as in autumn. The Quail passes north through Damascus in spring in thousands.

***Pelecanus onocrotalus*.**

P. o. onocrotalus L.

A flock of forty-three was observed passing west at Rafa on 22.ix. Observed on spring passage at Belah on 20.iv. and 28.v. in flocks of one hundred and twenty and of five, and at Ramleh on 7.iv. in a flock of one hundred and fifty.

***Megalornis grus*.**

M. g. grus (L.).

Several small parties were seen near Rafa and Beersheba from 10.xi. to 7.i. Observed on spring passage at Ramleh on 20.iii.

***Anthropoides virgo* (L.).**

Flocks of sixty and twenty were observed on spring passage at Ramleh on 16.iii. and 18.iii.

***Rallus aquaticus*.**

R. a. aquaticus L.

One record at Rafa on 27.xi. This bird is of the typical dark race and not *korejewi* from Central Asia.

***Porzana porzana* (L.).**

The Spotted Crake was common on passage near Rafa from 7.ix. to 11.x. It was also observed at Ramleh on 8.iv.

***Crex crex* (L.).**

First seen on autumn passage at Rafa on 22.viii., but became common during the first fortnight of September, arriving with the Quail. The numbers decreased towards the latter half of September, and only a few were met with during the first half of October.

On spring passage it was common at Ramleh in early May.

***Gallinula chloropus*.**

G. c. chloropus (L.).

First observed on autumn passage at Rafa on 25.ix., when several immature birds appeared, usually taking refuge in tents. An adult was captured on 3.x., after which date no more were seen.

A plentiful resident in the marshes of the coastal plain round Julie and on the Brook Kishon.

***Fulica atra*.**

F. a. atra (L.).

A winter visitor in small numbers to southern Palestine, the earliest record being on 4.xi. at Rafa, but suitable Coot ground is so scarce that we could not expect to find this bird in any numbers anywhere.

***Burhinus oedicnemus*.**

B. a. saharæ (Rehw.).

This is the breeding bird and probably resident in southern Palestine and northern Sinai. The numbers are increased in late autumn and winter by visitors from elsewhere. Two eggs were found near Rafa on 5.vi., and near Jaffa at the end of May.

Birds shot at Rafa on 10.ix. and 15.xii. agree well with a large series of *saharæ* from North Africa, but another shot on 15.xii., and one of a pair of which the other bird was also obtained, are distinctly darker and greyer than any *saharæ* at Tring, and cannot be matched by specimens of *B. a. oedicnemus* from Western Europe, from which they differ in being much greyer. But as the other bird of the pair is typical *saharæ*, I can only ascribe the difference in tone to individual

variation, especially in a species which is subject to considerable individual variation in colouring.

The wings of two males measure 224 and 246 mm., and that of a female 246 mm.

Cursorius gallicus.

C. g. gallicus (Gm.).

A common summer visitor to southern Palestine and northern Sinai, at least as far north in the coastal plain as Ramleh, where it is rare. The spring arrival was not noted. The autumn departure synchronises with the hibernating of lizards and insects which are the main food ; it takes place about 21. ix. None were seen after 4. x., except a family party which remained near Shellal till at least 3. xii.

The birds lay round Rafa and Belah in June, eggs being found near Ramleh on 25. vii. by Sladen, and young on 30. vii. They kept in family parties till they departed, and showed no sign of "packing." Young birds commence to assume adult plumage in the middle of October, which is completed by early December.

Glareola pratincola.

G. p. pratincola (L.).

Observed on spring passage at Rafa on 3. vi., when a party of eleven birds rested near a lake for eight days, and on autumn passage on 4. x. near Shellal, when a few were seen on the desert.

This is a common breeding species on the Wadi Rubin, nesting among open rushes on sand. Birds were sitting on full clutches on 30. vi.

***Glareola nordmanni* Nordm.**

Not observed by me, but Sladen obtained one on the Wadi Gaza on 4. x.

Charadrius hiaticula.

C. h. tundrae (Lowe).

A few non-breeding birds were at Rafa in June, and

remained till August. None were seen in September, but throughout October and till January they were common on the coast from Jaffa to Rafa.

Charadrius dubius.

C. d. curonicus Gm.

A few were at the mouth of the Wadi Gaza in July and August. Large flocks appeared at Belah in the middle of October.

Charadrius alexandrinus.

C. a. alexandrinus L.

Plentiful on the coast of northern Sinai from early June to the end of July, but not nesting. Several were seen near Rafa in the middle of September, and near Gaza in the middle of November. Specimens were obtained by Sladen at Jaffa on 25. vi. and 14. i., and near Carmel on 26. iv. It would therefore appear that this bird is a resident on the coast.

Charadrius leschenaulti Less. (= *geoffroyi*.)

The status of this Plover is most confusing in the Near East. It appears to be found on the coast of southern Palestine, the Red Sea, and Somaliland throughout the summer, not individual birds, but large parties. We found it common at Rafa in June and July. Several were seen in August and September, and one in October.

Charadrius morinellus L.

A common winter visitor to the desert plains between Rafa and Shellal, but not noted north of Gaza. It first appeared at Rafa on 7. xi., and the numbers were much increased between 11. xii. and 19. xii. They decreased in early January, but considerable numbers remained. The departure in spring was not noted.

Charadrius apricarius L.

A winter visitor in small parties from early December to January and February, but not seen far from the coast,

Vanellus vanellus (L.).

A common winter visitor to the coastal plain and northern Sinai from 1. xi. to March, a few being seen in the Shephelah in December.

Hoplopterus spinosus (L.).

A few were seen near the coast from early September to early January.

Erolia ferruginea (Brünn.).

One was seen at Belah on 2. vi. in full breeding-plumage. Not otherwise observed.

Erolia alpina.

E. a. pusilla (Falk.).

The large size of Palestine birds, wings 115 to 116 mm., and culmens of 39 and 40 mm., compels me to refer them to this somewhat doubtful race from western Siberia.

Small flocks first arrived in the Wadi Gaza on 7. vii. They were all adults and in nearly full breeding-plumage. On 3. viii. a large influx of mixed old and young arrived on the coast near Rafa, many adults still showing signs of breeding-plumage. By the middle of September, Dunlin were in thousands on the coast, after which their numbers rapidly decreased, till by the end of November very few remained, and these were still about in early January.

Erolia minuta (Leisl.).

Many were on the coast between Gaza and Rafa from 1. vi. to early January, their numbers receiving no visible increase in autumn. One was shot in the Jordan Valley on 28. x.

Philomachus pugnax (L.).

Several Ruffs and Reeves remained during summer on the coast of southern Palestine, the Ruffs showing no sign of assuming breeding-plumage. On 28. viii. the first autumn migrants arrived, the cocks usually having a few ragged remains of the spring ruff. These birds remained about till early October, when they all left.

At Ramleh, two cocks, shot on 22.iii. and 1.iv., show no sign of breeding-plumage.

Of four males, the wings vary from 177 to 186 mm., and the culmens from 40 to 45 mm. Of three females, the wings vary from 143 to 150 mm., and the culmens from 33 to 37 mm. It is remarkable what great variation in size of the culmen occurs in this species, especially in the Reeve.

Gallinago gallinago.

G. g. gallinago (L.).

From the end of September a few are to be found in suitable places.

Limnocryptes gallinula (L.).

One was shot at Shellal on 21.xi., and it was not uncommon in the coastal plain in winter.

Crocethia alba (Pall.).

A few arrived on the coast near Rafa on 16.ix. in company with Dunlins, the birds being in half-moult. Their numbers were increased by 23.ix., when they occurred in flocks of thirty and forty. On 29.ix. they were still more numerous, but by early October they had nearly all gone. A few observed as late as 13.xi.

Limicola falcinellus.

L. f. falcinellus (Pont.).

Two examples of the Broad-billed Sandpiper were obtained at the mouth of the Wadi Gaza on 5.viii. and 10.viii. These birds are probably much overlooked. They appear to be a regular and not uncommon autumn visitor to the Nile Delta.

Tringa erythropus Pall.

One was seen at Belah in breeding-plumage on 1.vi. and again on 5.vii., probably the same bird. Not obtained.

Tringa totanus (L.).

Not obtained. Three were at Belah throughout June. Autumn migrants commenced to arrive on 7.vii., their

numbers increasing on 3. viii., and from then to early January there were always a few to be seen on the coast from Jaffa to Rafa.

***Tringa stagnatilis* (Bechst.).**

A few turned up near Gaza from 7. viii. to 15. viii. No others were seen. Three were obtained.

***Tringa nebularia* (Gunn.).**

Not obtained. One was seen at Belah in breeding-plumage on 4. vi. A few were to be found near Gaza from 21. viii. to 25. xi.

***Tringa ochropus* L.**

Obtained on the coast of southern Palestine on 23. ii. and 1. iv. A not uncommon winter visitor.

***Tringa hypoleuca* L.**

Not common, the first autumn arrival at Gaza arriving on 10. x. More numerous on spring passage, when it was obtained from 26. iv. to 26. vi.

***Himantopus himantopus* (L.).**

A few can be seen throughout the year on the coast and coastal plain. No evidence of breeding. Not obtained.

***Recurvirostra avosetta* (L.).**

Observed near Rafa on 29. vii., 26. xi., and 11. xii. Rare.

***Limosa limosa*.**

***L. l. limosa* (L.).**

The only bird seen, a female of the year, was shot at Gaza on 29. viii. Wing 211 mm.

***Hæmatopus ostralegus* L.**

Only observed once, when a party of four appeared near Gaza on 2. vii. Not obtained.

***Numenius arquatus* (L.).**

A scarce winter visitor to the coast. Not obtained,

Numenius tenuirostris Vieill.

We did not observe this species. Sladen obtained a female at Shellal on 4. x.

Numenius phæopus.

N. p. phæopus (L.).

One was shot at Shellal on 4. x., and others were heard passing over at night at the same place on 26. xi.

Scolopax rusticola.

S. r. rusticola L.

A not uncommon winter visitor to southern Palestine. Obtained in the Shephelah on 2. i., in the Judean highlands on 27. i., at Belah on 1. i., while Sladen shot one at Jaffa on 8. i.

Hydrochelidon nigra.

H. n. nigra (L.).

An immature bird shot at Shellal on 30. ix. is the only record.

Hydrochelidon leucoptera (Temm.).

A few were at Belah in early June, but showed no signs of breeding. Also obtained on 11. viii.

Hydrochelidon leucopareia.

H. l. leucopareia (Temm.).

An adult in winter plumage shot at Shellal on 30. ix., and another on the Wadi Rubin on 14. x. are the only records.

Larus fuscus.

L. f. fuscus L.

Twenty-seven birds (eleven adults and sixteen birds of the year) arrived at the mouth of the Wadi Gaza on 2. viii. so exhausted that they could scarcely fly, and were walking among the troops like chickens. A few were seen on the coast throughout October. No other gulls of any sort were noticed at any time.

